

Hydrological Outlook UK

Period: From January 2016

Issued on 12.01.2016 using data to the end of December 2015

SUMMARY

The one-month outlook is for January river flows to be above normal across most of northern and western Britain, with flows likely to be much higher than the normal range in some areas, particularly in north-east Britain where flows may be exceptional (major flooding has already occurred in early January in eastern Scotland). In south-east England, flows are likely to be normal to above normal. January groundwater levels are also likely to be normal to above normal. These expectations are largely a result of the very wet start to January, which has seen exceptional rainfall in many areas; much of north-east Britain saw more than the January average in the first week. Meteorological projections do not show any strong signal for wet or dry conditions over the next three months, implying normal river flows and groundwater levels will predominate, although the wet start to 2016 may result in seasonally high levels in some aquifers.

Note: Up-to-date flood warnings are available from the websites of the Environment Agency, Natural Resources Wales and Scottish Environment Protection Agency (for links see over).

Rainfall: [based on projections released by the Met Office on 27 December] For January and for January-February-March, both above- and below-average precipitation are equally probable. The probability that UK-average precipitation for January-February-March will fall into the driest of five equal categories is around 20% and the probability that it will fall into the wettest of five categories is also around 20% (the 1981-2010 probability for each of these categories is 20%).

River flows:

River flows for December were exceptional across northern and western Britain, with new peak flow records established in many catchments, leading to severe flooding in many areas of northern England and Scotland. In southern and eastern England, December flows were mostly in the normal range. The one-month ahead projections based on the rainfall forecasts detailed above indicate above normal flows in northern and western Britain, and normal flows in south-east England. However, as usual there is a wide range in the rainfall forecasts and the exceptional rainfall witnessed in early January has increased the likelihood of the upper range of forecasts. Given the recent rainfall, it is likely that flows in northern Britain will be substantially above normal, with exceptional flows very likely in parts of north-east Britain that have been wettest. There is also an increased chance of above normal flows in south-east England. The three month outlook is more suggestive of a return to the normal range across the UK; the wet start to January increases the likelihood of flows above the normal range, but this has less influence on the three month outlook.

Groundwater:

December groundwater levels in the Chalk displayed a very mixed pattern, with below normal levels in some boreholes in central southern England and normal or above normal levels elsewhere. In other aquifers levels were normal or above normal, with very high levels in some northern aquifers. Based on early January rainfall, groundwater levels in the next month are likely to be normal or above except in the slower responding parts of the Chalk in central and eastern England. Exceptionally high levels will persist across Permo Triassic aquifers in the north. In the Yorkshire Chalk and in Wessex and along the south coast, levels may rise to notable or exceptional levels and this may result in localised groundwater flooding. The three month outlook suggests a similar pattern, with normal to above normal groundwater levels prevailing, and a significant chance of notably high or exceptionally high levels in the most responsive aquifers.

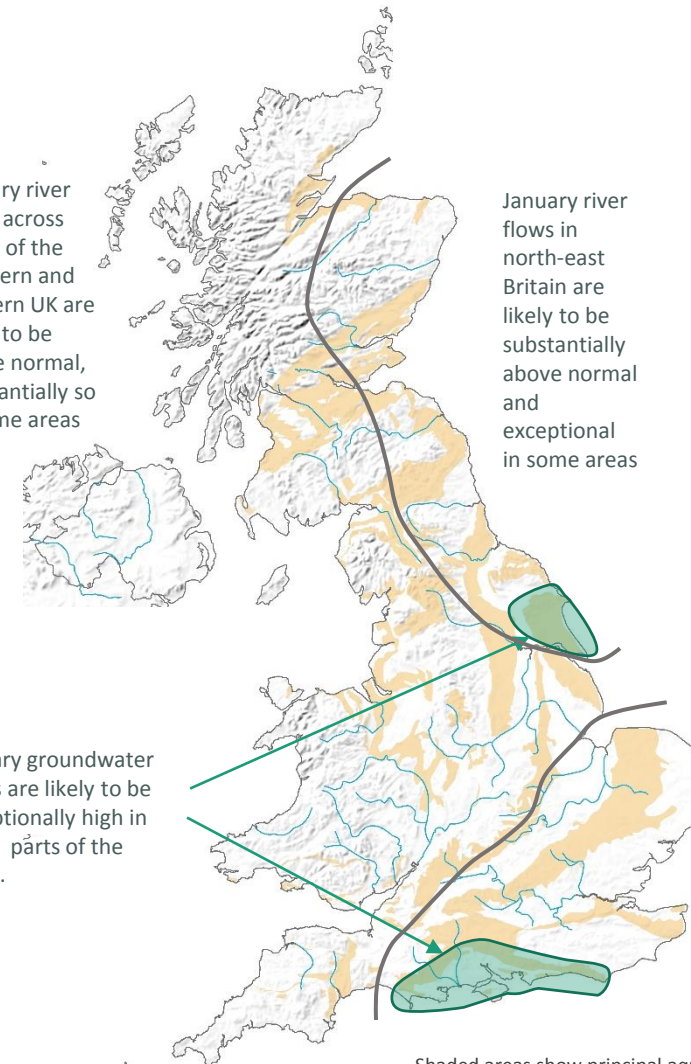
The Hydrological Outlook UK provides an outlook for the water situation for the UK over the next three months and beyond. For guidance on how to interpret the outlook, a wider range of information, and a full description of underpinning methods, please visit the website: www.hydoutuk.net

January river flows across much of the northern and western UK are likely to be above normal, substantially so in some areas

January river flows in north-east Britain are likely to be substantially above normal and exceptional in some areas

January groundwater levels are likely to be exceptionally high in some parts of the Chalk.

January river flows in south-east England are likely to be normal to above normal



Shaded areas show principal aquifers

About the Hydrological Outlook UK

About the Outlook:

This document presents an outlook for the UK water situation for the next 1 – 3 months and beyond, using observational datasets, meteorological forecasts and a suite of hydrological modelling tools. The outlook is produced in a collaboration between the Centre for Ecology and Hydrology (CEH), British Geological Survey (BGS), the Met Office, the Environment Agency (EA), Natural Resources Wales (NRW), the Scottish Environment Protection Agency (SEPA), and the Northern Ireland Rivers Agency (RA).

Data and Models:

The Hydrological Outlook depends on the active cooperation of many data suppliers. This cooperation is gratefully acknowledged. Historic river flow and groundwater data are sourced from the UK National River Flow Archive and the National Groundwater Level Archive. Contemporary data are provided by the EA, SEPA, NRW and RA. These data are used to initialise hydrological models, and to provide outlook information based on statistical analysis of historical analogues.

Climate forecasts are produced by the Met Office. Hydrological modelling is undertaken by CEH using the Grid-to-Grid, PDM and CLASSIC hydrological models and by the EA using CATCHMOD. Hydrogeological modelling uses the R-groundwater model run by BGS and CATCHMOD run by the EA. More information is available from the Outlooks website: <http://www.hydoutuk.net/methods>

Disclaimers:

This document aims to provide an indicative outlook for the water situation using the most comprehensive and up-to-date hydrological data, and modelling techniques. The Outlooks are intended to provide guidance on the likely water situation in the UK over the coming months, and should not be used in isolation, but alongside other sources of information such as flood warnings and meteorological forecasts (see links right).

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Further information:

For more detailed information about the Hydrological Outlook, and the derivation of the maps, plots and interpretation provided in this outlook, please visit the Hydrological Outlook UK website.

The website features a host of other background information, including a wider range of sources of information which are used in the preparation of this Outlook.

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Reference:

Hydrological Outlook UK, 2016, January, Centre for Ecology and Hydrology, Oxfordshire UK, Online, <http://www.hydoutuk.net/archive/january-2016/>

Other Sources of Information:

The Hydrological Outlook should be used alongside other sources of up-to-date information on the current water resources status and flood risk.

Hydrological Summary for the UK: provides summary of current water resources status for the UK: http://www.ceh.ac.uk/data/nrfa/nhmp/monthly_hs.html

Environment Agency Water Situation Reports: provides summary of water resources status on a monthly and weekly basis for England: <https://www.gov.uk/government/collections/water-situation-reports-for-england>

Flood warnings are continually updated, and should be consulted for an up-to-date and localised assessment of flood risk:

Environment Agency: <https://flood-warning-information.service.gov.uk/map>
Scottish Environment Protection Agency: <http://www.sepa.org.uk/flooding.aspx>

UK Met Office forecasts for the UK:
www.metoffice.gov.uk/public/weather/forecast/#?tab=regionalForecast